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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements	)	IB Docket No. 99-67
	)	DA 00-2826
Petition of the National Telecommunications and Information Administration to Amend Part 25 of the Commission's Rules to Establish Emissions Limits for Mobile and Portable Earth Stations Operating in the 1610-1660.5 MHz Band	)	

To: Chief, International Bureau

JOINT SUPPLEMENTAL COMMENTS OF GLOBALSTAR USA, INC., GLOBALSTAR, L.P., L/Q LICENSEE, INC., AND QUALCOMM INCORPORATED

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February 20, 2001

SUMMARY

Given current MSS technology and service deployment, and the costs of implementing certain basic 911 and any E-911 capabilities, requirements beyond certain limited basic 911 requirements are technically and economically infeasible and contrary to the overall public interest. GUSA currently provides reliable emergency access services to its U.S. subscribers via a centralized service bureau. GUSA's experience with emergency calls over the Globalstar network indicates that 911 requirements akin to those imposed on terrestrial CMRS will impose enormous costs on MSS providers with minimal overall benefit to public safety.

911/E-911 rules for terrestrial CMRS were adopted in 1996 after terrestrial cellular carriers and network technologies were well-established financially and commercially and after some basic principles for E-911 rules had been established between industry and public safety organizations. In adopting rules for terrestrial CMRS, the Commission cited to the fact that wireless customers place a large number of 911 calls, but determined that such requirements were not appropriate for MSS. The Commission's original determination remains applicable today, as there are numerous technical, marketplace and economic distinctions between terrestrial CMRS and MSS providers.

The Commission should encourage MSS providers to implement a centralized service bureau approach. Many MSS providers, including GUSA, provide such services now. Moreover, MSS systems provide a significant public safety benefit by providing access to the PSTN and to emergency assistance where otherwise there would be none, and Commission policies should not discourage or delay the deployment or marketability of MSS services and handsets to the public. Very few of GUSA's 911 calls have needed to be routed to PSAPs, and given the differences between terrestrial and MSS wireless services, the overall public interest does not warrant imposition of 911 requirements on MSS providers.

911 service beyond a service bureau approach is not technically or economically feasible for MSS providers. Automatic routing should not be required, as it would effectively require MSS providers to deploy "Phase II" ALI capabilities. Given the different types of MSS services and technologies, the Commission should encourage MSS providers to implement their own unique capabilities rather than mandate across-the-board requirements. Any "basic 911" service required of MSS providers should not require transmission of calls from unauthorized or unidentified users. Also, separate requirements are inappropriate for dual- or multi-mode handsets.

Imposing E-911 requirements on MSS providers will not promote the public interest. In considering such requirements, the Commission must keep in mind that its Section 1 mandate to promote safety of life and property is limited to the scope and character of the wireless services at issue, and differences between terrestrial CMRS and MSS are significant in this regard. Imposition of such requirements will detract from other acknowledged public interest benefits associated with MSS deployment. The deployment of ANI or ALI capabilities will be cost prohibitive and will require considerable product development -- all at a time in which MSS providers are focusing on pressing commercial challenges.

The Bureau seeks comment on a number of additional issues, some of which are addressed herein. The Commission has already adopted call priority requirements for all CMRS providers, including MSS, and there is no need to revisit that issue in this proceeding. Digital TTY compatibility for MSS services would require costly development for gateway facilities and handsets, none of which would be economically viable. 911 and E-911 deployment would require significant coordination with PSAPs and LECs. Finally, a disclosure/notification requirement is not objectionable, provided that MSS providers have sufficient flexibility in implementing such a requirement.

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Globalstar USA, Inc. ("GUSA"), Globalstar, L.P. ("Globalstar"), L/Q Licensee, Inc. ("LQL") and QUALCOMM Incorporated ("QUALCOMM") (collectively, the "Globalstar Parties"),[1] hereby file supplemental comments in response to the International Bureau's Public Notice inviting further comment regarding the adoption of 911 requirements for mobile satellite service ("MSS")

[1]GUSA is the United States service provider for the Globalstar™ MSS above 1 GHz satellite system. LQL is the licensee of the Globalstar satellite constellation. *See* Loral/Qualcomm Partnership, L.P., 10 FCC Rcd. 2333 (Int'l Bur. 1995). Globalstar, L.P., holds the right to offer capacity on the Globalstar system and owns and operates the international MSS business. QUALCOMM is a partner in the Globalstar business and developed the Mobile Earth Terminals ("METs") used with the Globalstar system. The Globalstar system has been offering commercial services for approximately one year in the United States.

providers.[2] For the reasons discussed herein, the Commission should maintain its current rules and not impose basic and enhanced 911 (respectively, "Basic 911" and "E-911") requirements on MSS providers at this time. Given current MSS technology and service deployment, and the substantial costs associated with implementing certain Basic 911 and any E-911 capabilities, any requirements beyond the "Service Bureau" approach, which certain MSS carriers *do* provide at this time on a voluntary basis, are technically and economically infeasible and contrary to the overall public interest.[3]

BACKGROUND

GUSA provides reliable emergency access services to its subscribers in the United States. GUSA offers its customers "Emergency Call-Assistance Service" ("ECAS") which, in GUSA's experience, "provides reliable public safety access to MSS customers."[4] ECAS provides emergency assistance not only for callers dialing "911," but also abbreviated emergency dialing codes such as 112, 119 and 113 that are used overseas, all of which are routed to a central service bureau.[5] The service bureau, in turn, utilizes a centralized database of public safety answering points ("PSAPs") for the U.S. and Canada with their respective geographic jurisdictions (developed in cooperation

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[2]*See* Public Notice, *International Bureau Invites Further Comment Regarding Adoption of 911 Requirements for Satellite Services*, IB Docket No. 99-67, DA 00-2826 (rel. December 15, 2000), 66 Fed. Reg. 3960 (Jan. 17, 2001) ("Public Notice").

[3]Attached hereto is a copy of a declaration from Paul Guckian, Director, Engineering, of QUALCOMM, attesting as to the accuracy of the statements contained herein regarding the technical engineering and cost difficulties of implementing basic or E-911 capabilities in the Globalstar system.

[4]*See infra* note 17 and accompanying text.

[5]*See* Public Notice at 5 (seeking comment on whether "a nationwide database [has] been developed that emergency-call operators could use to ascertain which PSAP to contact in any given instance").

with the National Emergency Number Association ("NENA") and Public Safety Associates), and routes the call to the appropriate PSAP based on information provided by the caller.[6] All U.S.-originated calls (outside Puerto Rico and the Caribbean) within gateway coverage using pre-defined emergency dialing codes, including calls routed through GUSA's Canada and U.S. gateways, are routed to this central service bureau.[7]

GUSA's experience with emergency calls over its MSS network underscores that 911 requirements akin to those imposed on terrestrial wireless will impose enormous costs on MSS providers with minimal overall benefit (if any) to public safety. Separate from any 911/E-911 obligations, MSS services provide communications links in geographic areas where such services are otherwise not available -- often with public safety benefits. As discussed below, the technological obstacles, the economics confronting the MSS industry, and the extent of MSS market penetration bear no resemblance to the situation facing cellular and PCS carriers at the time the Commission adopted 911/E-911 rules. Moreover, there has been no demonstration that significant public safety benefits will accrue to the MSS subscribers if the existing 911/E-911 requirements are imposed on the industry. The public interest mandates that Commission account for these factors and not impose 911/E-911 requirements on MSS providers.[8]

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[6]*See id.* (seeking comment on whether "the database include[s] long-distance telephone numbers for contacting emergency-call handlers at each PSAP").

[7]Thus, there is no "need for special provisions pertaining to emergency MSS calls placed from within the U.S. but routed via foreign gateway stations[.]" *See id.* at 7. Calls in Puerto Rico and the U.S. Virgin Islands, which are routed to GUSA's gateway facility in Puerto Rico, are not currently routed to the service bureau, but GUSA believes that such routing can be accommodated in the future.

[8]As the Commission has acknowledged, conformity for conformity's sake does not always serve the public interest in the CMRS context:

> [W]e conclude that differences between rules governing actually or potentially

DISCUSSION

I. THE PROFOUND DIFFERENCES BETWEEN TERRESTRIAL AND SATELLITE CMRS SYSTEMS DICTATE DIFFERENT 911/E-911 REGULATORY POLICIES

When the Commission initiated its E-911 proceeding in 1994, it determined pursuant to its mandate under Section 1 of the Communications Act (the "Act") "that broad availability of 911 and enhanced 911 services will best promote 'safety of life and property through the use of wire and radio communication.'"[9] The Commission initiated the E-911 proceeding after the cellular industry and cellular network technologies were well-established financially and commercially. Cellular carriers had a decade of engineering and marketing experience in deploying facilities throughout local markets in the Unites States prior to the Commission's evaluation of whether and how to implement 911 capabilities. The 1994 *NPRM* was also initiated in the context of a joint industry and Public Safety Answering Point ("PSAP") organization effort to set forth some basic principles for

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> competitive services should be conformed *if we determine that the differences distort competition by placing unequal regulatory burdens on different classes of CMRS providers*. Such conformity between rules will not be imposed, however, if we determine that, although the relative burdens imposed by the rules may not be identical, *the cost of conforming the rules outweighs the benefit that might be gained thereby*.

Implementation of Sections 3(n) and 332 of the Communications Act, Third Report and Order, 9 FCC Rcd. 7988, ¶ 15 (1994) (emphasis added). As discussed herein, the costs of imposing 911/E-911 requirements on MSS CMRS providers clearly outweigh any potential benefits.

[9] *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Notice of Proposed Rulemaking*, 9 FCC Rcd. 6170, 6171-72, ¶ 7 (1994) (citing 47 U.S.C. § 151) ("*NPRM*").

911 and E-911 rules.[10] The rules themselves were, in turn, adopted after further consensus was achieved between industry and PSAP organizations.[11]

The Commission adopted basic and enhanced 911 requirements for cellular, broadband PCS and certain SMR carriers in 1996.[12] One of the primary reasons cited by the Commission for imposing these requirements on these commercial mobile radio service ("CMRS") providers was that "wireless customers place a large and increasing portion of 911 calls," a finding the Commission reiterated later in the proceeding.[13]

The Commission recognized at the outset, however, the many technical, financial, and commercial distinctions between terrestrial CMRS and MSS providers, finding "that adding specific regulatory requirements to MSS may impede the development of the service in ways that might reduce its ability to meet public safety needs."[14] The Commission reaffirmed this conclusion on reconsideration, stating that "it is our policy in this proceeding not to impose specific regulatory requirements on certain classes of CMRS providers *that have not yet fully developed their commercial services*."[15] The Commission "expect[ed] that CMRS voice MSS will eventually

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[10]*See id.* at 6176.

[11]*See Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd. 18676, 18688 (1996) ("*E-911 Report and Order*").

[12]*Id. at* 18682 ¶ 10 (1996). Since that time, numerous technological and implementation hurdles have arisen in the development and deployment of E-911 capabilities.

[13]*Id.* at 18680 ¶ 6; *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Memorandum Opinion and Order*, 12 FCC Rcd. 22665 22669 ¶ 9 (1997) ("*E-911 Reconsideration Order*"); *see also* S. Rep. No. 106-138, *Wireless Communications and Public Safety Act of 1999*, at 1 (1999) ("Senate Report").

[14]*E-911 Report and Order*, 11 FCC Rcd. at 18718 ¶ 83.

[15]*E-911 Reconsideration Order*, 12 FCC Rcd. at 22207 ¶ 87 (emphasis added).

provide appropriate access to emergency services, either voluntarily or pursuant to Commission rules" and that the satellite industry would "continue [its] efforts to coordinate with public safety agencies to develop mutually acceptable emergency access services in the meantime."[16] The Commission stated that it would "revisit this issue *if the MSS industry develops into a commercial mobile telephone service similar to cellular and broadband PCS, and still does not provide reliable public safety access to MSS customers.*"[17]

Globalstar and a number of other industry commenters have explained the technical difficulties involved with MSS deployment of E-911 capabilities in this and in separate proceedings. Globalstar explained that the *global* nature of NGSO MSS systems, like the Globalstar system, which use only a few gateway earth stations for all call routing in the United States, contrasts with the fundamentally *local* nature of E-911 deployment and the more *localized* deployment of terrestrial wireless systems.[18] Globalstar also explained that "Phase II" automatic location identification ("ALI") capabilities are particularly burdensome for reasons unique to MSS systems.[19]

The recognized distinctions between MSS and terrestrial mobile services remain true today. At the end of 1994, when the Commission initiated the 911 proceeding, there were over 25 million subscribers to mobile telephone systems. At the end of 1996, when the 911 rules were adopted, the number of cellular subscribers had nearly doubled to over 44 million. At the end of 1999, this number has doubled again to over 86 million subscribers to mobile telephone systems in the United

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[16]*Id.* at 22707 ¶ 88.

[17]*Id.* at 22708 ¶ 89 (emphasis added).

[18]Globalstar Comments in IB Docket No. 99-81, at 42-43; *see* Senate Report at 2 (legislation "also directs the [Commission] to support *state efforts* to create an end-to-end communications network," emphasis added).

[19]Globalstar Docket 99-81 Comments at 43.

States.[20] Therefore, the numbers supported the Commission's observation that the public was increasingly relying on terrestrial wireless services for emergency and non-emergency calls. Indeed, particularly as equipment and service prices decreased, the wireless telephone kept in an automobile glove box for emergency use has been a major segment of the markets for terrestrial CMRS providers.

In contrast, there are nowhere near as many subscribers to voice services over MSS systems in the United States. Satellite voice services have been available for nearly 20 years over Inmarsat, five years via Motient (formerly AMSC), two years over Iridium (commercial services currently suspended), and one year via Globalstar. Motient, as of 4Q2000, reports approximately 206,000 subscribers.[21] Inmarsat has just over 200,000 subscribers worldwide.[22] Iridium has suspended commercial operations, and at the end of 3Q2000, Globalstar had about 21,000 subscribers. Clearly, subscribership to MSS voice services is a small fraction of the subscribership of terrestrial mobile services. Therefore, one of the basic rationales for imposing 911 service on terrestrial CMRS providers -- the pervasive reliance on terrestrial CMRS -- is absent for MSS.

It is clear that the market for MSS has developed and continues to develop in a significantly different manner than the market for terrestrial mobile services. While mobile telephones are rapidly becoming a personal, always-on-hand telephone service, MSS is primarily a service for persons traveling to and living within rural and remote areas beyond wireline service areas and beyond the

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[20] *See Fifth Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, FCC 00-289, App. B, Table 1 (released Aug. 18, 2000) ("*Fifth CMRS Competition Report*").

[21] *See* Press Release, Motient Corporation Reports Fourth Quarter and Year-End 2000 Financial Results, available at <www.motient.com/template.cfm?Section=PressReleases&NavMenuID=67&Template=PressReleaseDisplay.cfm&PressReleaseID=115>.

[22] *See* <www.inmarsat.com/newsroom/index.html>.

footprint of wireless service providers. In these areas, the mere availability of a communications link is a significant advantage and public safety benefit to subscribers, overshadowing any need for a formal, separate emergency calling system.

There is also a significant commercial difference between the terrestrial and satellite markets with respect to the ability to absorb the costs of 911/E-911 requirements. For example, currently, there are dozens of companies providing various forms of terrestrial CMRS. Each of these companies is required to implement 911/E-911 technologies. Therefore, the manufacturers of E-911 technology have a substantial market, CMRS providers can shop among competing manufacturers, and the costs can be spread over millions of subscribers. In contrast, each operational MSS system is unique in terms of the frequencies it uses, its satellite configuration, and its design. Imposition of the existing 911/E-911 rules on MSS systems would require each system operator to accommodate the rules individually, and pass those increased costs directly on to a comparatively small number of subscribers. Adding costly and complex new regulatory requirements that impede the development of the service may thus have the adverse effect of undermining MSS providers' availability to meet public safety needs without any established need for such requirements.

II. THE COMMISSION SHOULD ENCOURAGE MSS PROVIDERS TO IMPLEMENT THE "SERVICE BUREAU" APPROACH DISCUSSED IN THE PUBLIC NOTICE FOR THE PROVISION OF BASIC 911 SERVICES

Because many MSS services are in their nascency (in comparison to cellular carriers at the time the Commission initiated the E-911 docket), the Globalstar Parties recommend the Commission not impose 911/E-911 requirements on MSS providers or, at most, require implementation of a service bureau approach for basic 911 service. Discussions with the Coast Guard and with organizations such as NENA could be constructive, *provided that* the Commission, Coast Guard and

PSAP organizations acknowledge the commercial and technical challenges facing MSS today. In this context, the Globalstar Parties submit that part of such a dialogue should include information from public safety organizations on a demonstrated need for 911/E-911 services over MSS.

A. MSS Providers Offer Access to Emergency Services Now

MSS systems are uniquely capable of providing safety needs to CMRS subscribers with communications needs outside the geographic areas served by terrestrial carriers.[23] For example, last year the Sheriff's Department of Orange County, California, used a Globalstar handset to dispatch bloodhounds to the scene during a search and rescue operation at a remote area where cellular and landline service were not available. Globalstar terminals have been sent to El Salvador to assist earthquake relief efforts, and to many other places where basic telephone services are either disrupted or nonexistent. Thus, MSS systems provide a significant public safety benefit -- independent of any additional regulatory obligations -- simply by providing access to the PSTN and to emergency assistance where otherwise there would be none. The Commission should therefore ensure generally that its MSS regulatory policies -- not limited to 911/E-911 requirements -- do not discourage or delay the deployment or marketability of MSS services and handsets to the public.

A review of GUSA call records indicates that since September 2000, GUSA has averaged 31 ECAS calls per month for both the U.S. and Canada and, on average, only 5 per month subsequently have needed to be routed to a PSAP. While Congress and the Commission have relied upon the fact that mobile wireless handsets are increasingly being used for the purposes of making emergency calls as a basis for imposing 911/E-911 requirements on terrestrial CMRS, this is simply

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[23] *See* Public Notice at 5 (seeking comment on whether there are "safety needs that MSS systems are uniquely or especially capable of meeting").

not the case yet for GUSA's service.[24] MSS is a different service, serving a different consumer market and subscriber base than terrestrial CMRS. The commercial uses and availability of MSS services (and thus, the frequency of MSS use for emergency calls, of course) may change depending on market developments and advances in handset design. Today, however, GUSA is not a CMRS service "similar to cellular and broadband PCS" such that the overall public interest warrants the imposition of 911 requirements on MSS providers.[25]

B. 911 Service Provision Beyond a Voluntary Service Bureau Approach Is Not Technically or Economically Feasible for MSS Providers and Is Contrary to Public Interest

As the Commission acknowledges in the Public Notice, and as the attached declaration attests, the routing of emergency calls by a MSS system to the appropriate PSAP presents "special challenges."[26] The Commission thus suggests that "emergency MSS calls might be routed to central operators, who could redirect the calls to the appropriate emergency response agencies in the caller's area" and that, "[i]n some cases, public safety needs may best be met by routing MSS emergency calls to someone other than a local PSAP, for instance to the Coast Guard." The Commission further inquires whether "MSS licensees [should] be required to route 911 calls directly to PSAPs in the caller's vicinity, or should they have the option of initially routing the calls to special operators at central emergency-call bureaus for relay to PSAPs based on information obtained from the callers?"[27]

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[24] *See supra* note 13.

[25] *See E-911 Reconsideration Order*, 12 FCC Rcd. at 22708 ¶ 89.

[26] *See* Public Notice at 3; Attachment.

[27] *See id.* at 4-5.

Based on GUSA's experience with ECAS, the Globalstar Parties agree that the service bureau approach is feasible and that the Commission should encourage MSS providers offering interconnected, real-time, two way switched voice service to adopt this approach.[28] Requiring automatic routing would be extremely burdensome and costly, as it would effectively require the deployment of Phase II ALI technology. Unlike locally-deployed fixed cellular and PCS base stations, which generally provide the carrier's switch with enough data to ensure reliable call routing, MSS providers have no comparable fixed point of presence near a caller's location. Also, establishing numerous PSAP connections would be cost-prohibitive, particularly if such connections needed to remain open at all times.

Automatic routing of an emergency call in a particular region to a pre-defined 10-digit PSAP number may eventually be possible with the Globalstar system's gateway technology, but only if a geographic database of such numbers is first completed and maintained. Moreover, unlike terrestrial wireless carriers, which can generally determine the appropriate PSAP by virtue of the cell site location receiving the 911 call, GUSA would need to rely on techniques such as ranging, triangulation and doppler frequency shifts, similar to the Global Positioning System ("GPS") geo-location system in order to derive an analogous solution -- the same technologies required for Phase II ALI service.

To make efficient use of satellite resources and to optimize traffic-handling capacity, the Globalstar system's positioning event is purposely limited in duration. Position accuracy is also limited by the user's distance from the serving gateway, gateway antenna outages for maintenance or failures, satellite geometry, and user-to-satellite link blockage which is highly dependent on the

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[28] *See id.* at 4 (seeking comment on scope of applicable MSS services). The Globalstar Parties understand that AMSC provides a similar service to its subscribers. *See* AMSC Comments in IB Docket No. 99-67, at 17.

user's activities.[29] As a result, the Globalstar system today can provide positioning accuracy for the continental United States only within a 10 kilometers over 90 percent of the time. Given this wide range of location determinations, even if the necessary databases and gateway-selective router connections existed, GUSA's current positioning technology would not facilitate the reliable automatic routing of 911 calls. It is thus clear that a service bureau can make a better determination through direct contact with the caller as to which PSAP is the most appropriate.[30]

The Globalstar Parties emphasize that the description of GUSA's ECAS system is limited to its own services and may not be applicable to all MSS providers. Given the different types of MSS services and technologies, the Commission should encourage MSS providers to implement their own unique capabilities rather than mandate across-the-board requirements. This approach is consistent with the 911 Act mandate to "encourage and support efforts by States to deploy comprehensive end-to-end emergency communications infrastructure and programs" in consultation with industry and other parties.[31]

C. MSS Providers' Basic 911 Service Should Not Be Required to Transmit Calls from Unauthorized or Unidentified Users

GUSA's ECAS approach is, in essence, a form of "Basic 911," which the Commission's rules define as the "transmi[ssion of] all wireless 911 calls without respect to their call validation

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[29]A user on the run attempting to avoid an object or person is likely to lose connectivity with the satellites and cause the call to drop.

[30]The Globalstar Parties generally agree that, in some cases, 911 calls to MSS providers should be routed to non-PSAP entities, such as the Coast Guard. In this regard, emergency calls on the Globalstar system originating between about 10 kilometers and 300 kilometers from the U.S. coastline are planned to be routed to the Coast Guard.

[31]*See* Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, 113 Stat. 1286, § 3(b) (1999) ("911 Act").

process to a Public Safety Answering Point."[32] In this regard, the Commission seeks comment on whether "special regulatory policies" or "uniform policies" as between GMPCS and terrestrial wireless 911 services should apply to unauthorized and unidentified users.[33] For terrestrial wireless services, the rules initially required that all calls with a "code identification" be transmitted to PSAPs, but the Commission modified this requirement to require simply that "all calls" be transmitted, irrespective of customer validation procedures. The Commission reached this decision based on record evidence that terrestrial wireless switches could "either (1) transmit all calls without validation; or (2) transmit only calls from handsets that have been validated to prove the callers are current customers in good standing."[34]

Far different circumstances apply to GUSA's MSS service. It would therefore be inappropriate to extend the rules for terrestrial wireless 911 services blindly simply for the sake of conformity. Under GUSA's service, 911 calls from all users -- authorized or unauthorized -- are routed to the service bureau, provided that the handset has an identifiable international mobile subscriber identity ("IMSI"). For *unidentified users* (*i.e.*, those using non-service initialized handsets), however, such calls cannot be completed, absent additional software development in the handsets and the gateways. To allow completion of such calls to the service bureau would require support for Electronic Serial Number ("ESN") addressing, requiring additional significant

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[32]*See* 47 C.F.R. § 20.18(b).

[33]*See* Public Notice at 6. It is not clear what the Public Notice means by "unauthorized" or "unidentified" users in the MSS context. For purposes of the Globalstar Parties' discussion herein, an "unauthorized user" refers to a user other than the subscriber of record who, for example, may not be aware of validation procedures (*e.g.*, a subscriber's password or PIN) for a service-initialized handset. An "unidentified user" is a user of a non-service initialized handset that cannot be identified by the Globalstar network due to the absence of a valid IMSI.

[34]*See E-911 Reconsideration Order*, 12 FCC Rcd. at 22680.

development in gateway capabilities. The public interest factors underlying the "all calls" requirement for terrestrial wireless carriers simply are not applicable to GUSA's MSS service, and should not be extended to MSS providers.

D. The Commission's Rules Should Not Impose Separate Requirements for Dual- or Multi-Mode Terminals Incorporating Cellular/PCS Transceivers

GUSA's service currently involves two separate subscriptions -- one for cellular and one for MSS service -- with no integration between the cellular and satellite networks. Moreover, the challenges for integrating the cellular and MSS networks are enormous due to the fragmented coverage and different technologies deployed for various cellular and PCS providers across the United States. An emergency call will take place on one system or the other, but not on both simultaneously. Separate rules should apply depending on the mode of the handset: the cellular/PCS portion of the handset and service will be compliant with 911 and E-911 rules for cellular/PCS, and the MSS portion of the handset and service should be compliant with any applicable MSS requirements.

III. MANDATING THAT MSS PROVIDERS DEPLOY E-911 CAPABILITIES WILL NOT PROMOTE THE PUBLIC INTEREST

The Commission seeks comment on whether ANI and ALI capabilities, akin to the "Phase I" and "Phase II" CMRS requirements, should be imposed on MSS licensees.[35] As discussed herein, implementation of ANI and ALI requirements would significantly and adversely affect market demand for and the commercial viability of MSS.[36] Such costs cannot be spread across a wide base of subscribers. The Commission's determination in the terrestrial CMRS context that carriers can

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[35] *See* Public Notice at 5, 6.

[36] *See id.* at 6.

simply "recover all their costs . . . through their own rates" is thus inapplicable to GUSA, and the costs of E-911 deployment clearly offset any minimal public safety benefit that may accrue from such requirements.[37] Moreover, there is no compelling need for these features in an MSS system, and the Globalstar Parties do not anticipate that the provision of such capabilities in itself will meaningfully enhance the commercial attraction of its service.[38]

A. The Commission's Section 1 Mandate to Promote Safety of Life and Property Is Limited By the Scope and Character of the Wireless Services At Issue

Throughout its E-911 proceeding and in the Public Notice, the Commission cited to its Section 1 authority "to promot[e] safety of life and property through the use of wire and radio communication" as a basis for imposing Phase I and Phase II capabilities on CMRS providers.[39] The Commission has also previously determined that the deployment of viable MSS services will serve the public interest for a variety of reasons:

> The 2 GHz MSS systems also will enhance *competition in mobile satellite and terrestrial communications services, and complement wireless service offerings through expanded geographic coverage.* 2 GHz MSS systems will thereby promote *development of regional and global communications to unserved communities* in the

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[37]*See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Second Memorandum Opinion and Order*, 14 FCC Rcd. 20850, ¶ 54 (1999).

[38]As of the end of 3Q2000, Globalstar reported 21,300 subscribers. Press Release, *Globalstar Third Quarter Results Show Modest Growth*, Oct. 30, 2000 (available at <www.globalstar.com/ EditWebNews/174.html>). As discussed herein, the Globalstar Parties estimate that implementing ANI capabilities *alone* will cost in excess of $1,000,000. GUSA has already implemented numerous discount plans. *See Globalstar USA Announces 'Time or Money' Promotion*, Oct. 16, 2000 (available at <www.globalstar.com/ EditWebNews/169.html>). Given the price-sensitive CMRS marketplace, recouping these costs through rates is simply not feasible. *See Fifth CMRS Competition Report* at 18-20 (discussing price competition).

[39]*See, e.g.*, Public Notice at 1 n.3; *E-911 Report and Order*, 11 FCC Rcd. at 18681 ¶ 8; *E-911 Reconsideration Order*, 12 FCC Rcd. at 22682 ¶ 33; *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Fourth Memorandum Opinion and Order*, CC Docket No. 94-102, FCC 00-326, ¶ 6 (rel. Sept. 8, 2000).

> United States, its territories and possessions, including rural and Native American areas, as well as worldwide. The policies and rules we adopt in this Report and Order are designed to expedite the authorization process and encourage utilization of 2 GHz spectrum *for delivery of the benefits of MSS to all U.S. consumers* nationwide.[40]

Similarly, the Commission stated in the *GMPCS* proceeding:

> [I]mplementing the international GMPCS-MoU will *speed deployment of GMPCS service* in the United States and around the world by establishing procedural and technical rules to ensure the safe and authorized use of mobile satellite service equipment. We anticipate that these GMPCS systems will provide *additional choices for delivering seamless voice, data and broadband services for consumers* in all parts of the world.[41]

Deployment of MSS systems serves public interest benefits by bringing services to areas not served by terrestrial systems, and by providing new competitive benefits to consumers. Consumers, however, will not enjoy such benefits unless MSS systems are economically viable.[42]

In addressing the E-911 issues raised in the Public Notice, the Commission must ultimately balance important and acknowledged public interest objectives. As noted above, the deployment of MSS services, in itself, has intrinsic public safety value. Thus, promoting the economically viable deployment of such services will serve the Commission's Section 1 safety mandate.

The Commission's Section 1 mandate to promote "safety of life and property" and its Section 303(r) "public interest" authority to regulate wireless carriers pursuant to that mandate are not unlimited. The Supreme Court admonished that the "public interest, convenience, or necessity"

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[40] *The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, Report and Order*, 15 FCC Rcd. 16127, ¶ 1 (2000) (citations omitted, emphasis added).

[41] *Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements, Notice of Proposed Rulemaking*, 14 FCC Rcd 5871, 5908 ¶ 99 (1999) (emphasis added).

[42] As the Commission has acknowledged, two MSS providers, Iridium LLC and ICO Global Communications Ltd., declared bankruptcy in 1999. *Fifth CMRS Competition Report* at 32.

standard of Section 303(r) "is not to be interpreted as setting up a standard so indefinite as to confer an unlimited power" but "is to be interpreted by its context, *by the nature of radio transmission and reception, by the scope, character and quality of services . . .*"[43] MSS providers incur many deployment and operating costs, face economic and technical obstacles, and serve markets that are different than those for terrestrial wireless providers.[44] The Commission must account for these service-specific characteristics before imposing requirements on MSS providers that were originally developed for a fundamentally different technology and marketplace. As discussed below, the characteristics of GUSA's MSS service demonstrate that imposing E-911 requirements will not serve the public interest consistent with the Commission's statutory mandate.

B. The Commission Should Not Mandate that MSS Providers Deploy ANI and ALI Capabilities

1. *Automatic Number Information ("ANI")*

GUSA's gateway facilities are not currently capable of accepting ANI information. Even if such capability existed, it is unclear whether PSAP or LEC trunking facilities -- including those in Canada -- are capable of transporting this enhanced call information. Moreover, in order for GUSA to provide ANI, it would require an American National Standards Institute ISDN User Part ("ANSI ISUP") connection to the PSTN, which would also require significant distance-sensitive trunking costs.[45] GUSA has only one gateway facility in the continental United States (in Clifton,

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[43]47 U.S.C. § 303(r); *National Broadcasting Co. v. United States*, 319 U.S. 190, 216 (1943) (citations omitted, emphasis added); *see also Aeronautical Radio, Inc. v. FCC*, 928 F.2d 428, 452 (D.C. Cir. 1991) ("The Commission's rulemaking authority is not unbounded").

[44]AMSC estimated that implementing ALI and ANI would cost hundreds of millions of dollars. AMSC 99-67 Comments at 16-17.

[45]For example, a single trunk from the GUSA's Clifton, Texas gateway facility to Waco, Texas is $1800 per month. A single trunk from that gateway facility to GUSA's Walnut Creek, California headquarters is $6,000 per month. Because there are several thousand PSAP jurisdictions

Texas), and its other gateway facilities are in Puerto Rico and Canada. Thus, intrastate, interstate and international trunking connections would need to be established. Moreover, the ANSI ISUP under development by QUALCOMM is not PSTN-certified and will take considerable time and cost to complete. The ANSI ISUP capability alone could be deployed not earlier than late 2002 or early 2003, and its cost (estimated at over $1,000,000), exclusive of trunking costs, would be enormously difficult to recoup at current subscribership levels. Further, given the low number of 911 calls over GUSA's MSS network (*see* discussion *supra*), the costs of imposing a "Phase I" ANI obligation on MSS providers are not justified. Deployment of this feature should be driven by each MSS provider's own determination of whether the higher development and connection cost is warranted in light of the enhanced features that may be provided to customers.

2. *Automatic Location Information ("ALI")*

The Commission also posits that "several technologies are being developed to identify the caller's location, including solutions that employ equipment in the wireless network and technologies employing upgraded handsets, with features such as GPS capability."[46] GUSA understands that ALI solutions from multiple vendors are not under development for MSS, as most MSS providers have traditionally used sole source vendors for economic reasons. For "Phase II"-level ALI, the Commission has apparently acknowledged that so-called "network-based" solutions for terrestrial CMRS carriers, which require use of cell sites, are inapplicable to MSS providers.[47]

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nationwide, it would be cost prohibitive to require trunks between GUSA's gateway facilities and each PSAP.

[46]Public Notice at 4.

[47]*See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Third Report and Order*, 14 FCC Rcd. 17388, ¶¶ 6, 23 (1999) ("*E-911 Third Report and Order*") (describing network-based Phase II solutions). For this reason also, "Phase I ALI," *i.e.*, the provision cell site location information, is inapplicable to MSS providers as

Even "handset-based" solutions require a switch-based network component that may not be readily interposed on an MSS gateway facility.

Moreover, it is important to note that the deployment of ALI capabilities requires more than simply placing a GPS chip in an MSS subscriber's handset. The GPS system operates separately from the Globalstar network, using separate frequencies.[48] Thus, coordinating the Globalstar positioning functionalities with the GPS system would require significant development of software capabilities, and any combined GPS and Globalstar solution places a significant cost and upgrade burden upon both the handset and the Globalstar gateways.

For the phone, additional RF hardware will be necessary to track a GPS signal, which has an associated development and manufacturing cost resulting, in turn, in increased product cost. The Globalstar and GPS transmission and receive functions cannot operate simultaneously because of spectrum interference concerns; during GPS position location determination or update, the user would be unable to transmit MSS voice communications for that period of time, which varies depending on how quickly the handset can determine its own position. In addition, there is significant development complexity necessary to transparently track the two separate Globalstar and GPS signals. In fact, for a handset-based GPS-only solution in which the Globalstar gateways are not providing position assistance, the GPS receiver within the handsets could take several minutes to successfully access the GPS satellites to determine its position. This is far slower than the amount of time necessary to establish a Globalstar call, which is in the order of a few seconds.

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well. *See* 47 C.F.R. § 20.18(d)(1).

[48] *See also* Motorola 99-67 Comments at 19 (explaining that GPS "has a very limited link margin compared to some MSS systems" and "MSS handsets will frequently operate in environments where the GPS receiver would not").

To fully support emergency services utilizing GPS technology, the Globalstar gateways would be required to provide GPS network-assistance to the phone. This requires deploying additional position-capable servers to provide position related information to the gateways. Also, additional remote GPS receivers are required to cover cases where the phone is in the fringe area of the gateway. These additional GPS receivers would provide the servers with GPS satellite information for satellites that are visible to the phone, but not visible to the gateway that is currently serving that phone. The effort to integrate these additional servers and GPS receivers into the already established world-wide gateways is a significant undertaking, both in terms of development and world-wide deployment.

The Globalstar system alone is incapable of providing ALI data in line with the current standard for terrestrial CMRS carriers. Currently, the "positioning" accomplished via the Globalstar system locates a user only within a range of 10 kilometers on average. While a posititioning verification range of one kilometer 90 percent of the time is theoretically possible for the Globalstar system, this accuracy level does not remotely approach the current ALI accuracy level required for terrestrial wireless.[49] Even this theoretical level of accuracy may not be achievable in practical use. The Globalstar system's ability to provide accurate positioning information depends on the number of satellites in view and, as the Commission is aware in the context of "handset-based" solutions for terrestrial wireless, "line-of-sight" considerations have a significant impact on the accuracy of satellite-based location systems.[50] Moreover, as noted earlier, the positioning functionality of the Globalstar system must be very limited in duration in order to facilitate efficient capacity use and reliable voice service. Position accuracy is further limited by the distance from the serving gateway,

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[49] *See* 47 C.F.R. § 20.18(h) (accuracy standards for cellular and broadband PCS).

[50] *E-911 Third Report and Order*, 14 FCC Rcd. at 17400-17401 ¶ 24.

as there is generally less accuracy at the edge of the coverage area due to a drop in multiple satellite co-visibility (*i.e.*, satellites simultaneously in view of both the gateway and the handset).

ALI interoperability also is problematic.[51] Given the significant differences between MSS systems both in the U.S. and worldwide, interoperability would be extremely difficult to achieve, unless a particular approach is deemed acceptable for a particular MSS system to uniformly deploy worldwide. As a related matter, MSS systems use widely varying air interfaces, which may not support particular ALI solutions. It would appear unnecessary to impose such a requirement, as MSS providers typically have nearly nationwide coverage, and roaming arrangements between MSS providers are nonexistent.

Finally, the Bureau seeks comment on whether it should adopt a rule "requiring MSS providers to make their systems ALI capable and offer ALI-capable terminals for sale or lease to customers who want them without barring continued provision of non-ALI capable terminals to customers who prefer them."[52] First, "*requiring* MSS providers to make their systems ALI-capable" is hardly a "flexible rule." Carriers would still incur gateway- and network-related costs, independent of the handsets. In any event, the Bureau should defer consideration of this issue to a later date because it presumes that MSS providers are capable of implementing meaningful ALI capabilities in the first place. Given the state of the MSS industry, it is questionable whether

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[51]*See* Public Notice at 6 (seeking comment on this issue). The Commission has required that handset-based ALI solutions "must be generally interoperable" such that "at a minimum . . . the solution must conform to general standards that permit the system employed by the carrier to provide 911 ALI for any ALI-capable handset that complies with the general standard, regardless of whether the handset uses the same ALI solution as that employed by the carrier." *E-911 Third Report and Order*, 14 FCC Rcd. at 17415-16 ¶ 60.

[52]Public Notice at 6.

economies of scale exist in manufacturing to warrant the production of "ALI" and "non-ALI" capable handsets.

IV. MISCELLANEOUS ISSUES

Call Priority. In the *E-911 Report and Order*, the Commission declined to "develop E911 call priority standards at th[at] time," instead "encourag[ing] the wireless industry and public safety organizations to continue working to resolve the technical and other issues associated with 911 call priority . . . ."[53] On July 13, 2000, the Commission adopted rules authorizing CMRS providers to offer Priority Access Service ("PAS") to public safety personnel at the Federal, State and local levels.[54] Under these rules, CMRS providers are permitted, but not required, to offer PAS to national security and emergency preparedness ("NSEP") personnel. The Commission decided to permit *all* CMRS providers to offer PAS to NSEP personnel -- including MSS providers.[55] This matter has already been addressed for MSS providers, and there is no need for the Commission to revisit the rules already in effect.

TTY Access. Subject to the availability of compliant products from vendors, GUSA's multi-mode satellite phones that incorporate digital terrestrial wireless service will comply with the Commission's recently-adopted rules for purposes of the cellular-mode.[56] TTY compatibility for

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[53] *E-911 Report and Order*, 11 FCC Rcd. at 18736 ¶ 119.

[54] *In the Matter of The Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010; Establishment of Rules and Requirements For Priority Access Service, Second Report and Order*, WT Docket No. 96-86, FCC 00-242 (July 13, 2000).

[55] *Id.* at ¶ 21.

[56] *See Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Fourth Report and Order*, CC Docket No. 94-102, FCC 00-436 (rel. Dec. 14, 2000) (to be codified at 47 C.F.R. § 20.18(c), Note).

the satellite mode, however, would require the costly development of modifications to satellite earth station gateways, as well as phone hardware and software, none of which would be economically viable for all the aforementioned reasons.

Coordination with LECs and PSAPs. Implementing either automatic 911 call routing or ALI/ANI capabilities would require considerable coordination with PSAPs. The thousands of individual PSAP networks have been deployed at a local level, with PSAPs acquiring trunking and other facilities directly from ILECs. Even for Phase I implementation, coordination between terrestrial wireless providers, PSAPs and LECs has reportedly been difficult. Moreover, coordination between PSAP entities themselves has been accomplished, at most, at a statewide level. In contrast, MSS services are nationwide or even worldwide in scope. Unlike the situation discussed previously with cellular and PCS carriers in 1994 and 1996, to date there has been no consensus achieved as to any of the steps that PSAPs must undertake to upgrade the E-911 network to accommodate MSS provision of E-911 information. For example, automatic routing of basic 911 calls would be cost prohibitive unless PSAPs themselves are financially responsible for the distance-sensitive trunk connections between GUSA's gateways and the many LEC selective routers nationwide. Moreover, given the few GUSA gateways serving the United States, PSAPs would need to obtain facilities from not only LECs, but interstate and international carriers. PSAPs have established no tandem network among themselves to handle 911 call traffic. This is just an example of the many issues that need to be addressed.

Notification. Comment is sought on whether the Commission should adopt a disclosure rule requiring manufacturers or sellers of GMPCS terminals that cannot be used for 911 emergency calls or with full E911 features to apprise users and potential purchasers of the functional limitations and, if so, whether the notice should be affixed to the equipment as a sticker or whether another means

of notification would suffice.[57] Generally, such a mandate is unnecessary, as MSS providers have ample incentive to make appropriate disclosures in their customer service agreements. Nevertheless, the Globalstar Parties generally would not oppose such a requirement, provided that carriers have sufficient flexibility in its implementation.[58] Stickers on the handsets themselves, billing inserts, and/or disclosures in customer service agreements each should be allowed for compliance purposes, depending on the individual MSS provider's particular circumstances. For handsets already in the field, for example, a billing insert should be sufficient.

[57]Public Notice at 7.

[58]This requirement appears similar to the disclosure regarding compatibility between TTY devices and digital wireless systems mandated for cellular and broadband PCS. *See E-911 Reconsideration Order*, 12 FCC Rcd. at 22695 ¶¶ 60-61.

CONCLUSION

For the foregoing reasons, the Commission should not impose 911 requirements on MSS providers but, instead, encourage MSS providers to implement a service bureau approach for the provision of certain Basic 911 services.

Respectfully submitted,

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February 20, 2001

ATTACHMENT

DECLARATION OF PAUL GUCKIAN

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DECLARATION OF PAUL GUCKIAN

I, PAUL GUCKIAN, state as follows:

1. I am a Director, Engineering for QUALCOMM Incorporated. In this position, I am responsible for identification and assuring compliance with technical regulatory requirements for the Gateway and Phone Products manufactured and sold by QUALCOMM Incorporated.

2. I graduated in Electrical and Electronic Engineering from Napier University, Edinburgh, Scotland in 1983 and have been working in the field of Electromagnetic Compatibility (EMC) and regulatory engineering for over 14 years. I have held a position with QUALCOMM Incorporated since June 1996 and currently lead the corporate EMC and Regulatory department. In this role I have worked extensively with the FCC to ensure that the QUALCOMM Incorporated products are designed and certified in compliance with the Commission's rules.

3. Through my current position and industry and educational experience, I am knowledgeable about issues relating to the design and capabilities of the Gateway and Phone Products manufactured by QUALCOMM Incorporated and used by Globalstar USA, Inc. and Globalstar, L.P. in operating the Globalstar network.

4. The Federal Communications Commission ("Commission") has proposed in a Public Notice to require providers of Mobile Satellite Services, such as Globalstar USA, Inc., to implement various Basic and Enhanced 911 emergency calling capabilities. I have read and am familiar with the Commission's proposal.

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5. I have reviewed the foregoing Joint Supplemental Comments ("Comments") and have personal knowledge of the facts contained therein as they relate to the handset and fixed earth station (Gateway) facilities utilized by Globalstar USA, Inc. and Globalstar, L.P. In my opinion and to the best of my knowledge, the foregoing Comments accurately discuss the potential engineering and cost difficulties of implementing the Basic or Enhanced 911 emergency calling capabilities described in the Public Notice.

6. I hereby state that the facts contained in the foregoing Comments and in the instant declaration are true and correct to the best of my knowledge, information and belief.

P. Guckian

PAUL GUCKIAN

Dated: 20 February 2001